DOCUMENT RESUME

ED 107 335 JC 750 375

TITLE	Measured Aptitudes vs Self-Rating in Identifying Occupations.
INSTITUTION	City Coll. of San Francisco, Calif.
PUB DATE	75
NOTE	9p.
EDRS PRICE	MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS	*Aptitude Tests; *Career Choice; *Computers; *Junior Colleges; Junior College Students; Occupational Guidance; Occupational Tests; Self Evaluation; Student Personnel Services; Vocational Aptitude; *Vocational Counseling
IDENTIFIERS	California Occupational Survey; CAOS; *City College of San Francisco; Computer Assisted Occupational Survey; COPS

ABSTRACT

Since 1972, guidance counselors at the City College of San Francisco have been using a computerized system called the Computer Assisted Occupational Survey (CAOS) to help students make career choices. CAOS uses a battery of aptitude tests to measure verbal and numerical abilities, spatial visualization, clerical perception, and general learning ability. Test scores are converted into a profile which is then related to Aptitude Qualifications Profiles found in the Dictionary of Occupational Titles. Before taking the aptitude test battery students make a self-estimate of expected standing on the tests. The California Occupational Survey (COPS), which measures occupational interests, is also administered. This study was undertaken to determine if occupational areas identified for exploration through aptitude test measurement corresponded to areas identified by student self-estimate of aptitudes. For only one of the 20 students studied was there much mutual identification of occupational areas. The data do not suggest which is the more valid approach; they only show that the two tend not to yield consistent results. Instances in which congruence of areas occurs perhaps offer the most significant leads. The revealed tendency of students to underestimate themselves suggests that more positive encouragement may derive from impersonal objective measurement. Tabulated data are appended. (Author/DC)

ED107335

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CITY COLLEGE OF SAN FRANCISCO

Office of Testing and Research

MEASURED APTITUDES VS SELF-RATING IN IDENTIFYING OCCUPATIONS

INTRODUCTION:

As the utilization of computer technology expands it is being adapted increasingly to educational uses. In recent years a number of adaptations in the area of counseling and guidance have been initiated. At Villa Park, Illinois, a Computerized Vocational Information System (CVIS) installed in several high schools and the local community college, provides direct access to a broad data base of personal student information, career planning material, and community resources. The Educational Testing Service has developed and is field testing a computer based System of Interactive Guidance and Information (SIGI). The Differential Aptitude Test Battery has been revised and extended to incorporate a Career Planning Questionnaire into its procedure. The American College Test (ACT) now includes a Career Planning Report as part of its service.

These are only a few of the many programs that have become operational. In simplest form the computer is used essentially as an automated library, offering ready access to information in response to questions fed into it. More sophisticated systems include personal data, such as grades or test scores, and attempt to match these data with educational and career planning information. Other methods depend on subjective self-appraisal by the student.

In operation input to the computer is done indirectly through batch processing or by direct interation between student and computer through a terminal.

At Monterey Peninsula College counselors have developed a "Career Self-Assessment Inventory" which relates student responses to a questionnaire to information derived from the Dictionary of Occupational Titles (DOT) and stored in the computer. This program is based entirely on self-estimate.

At City College of San Francisco a locally developed program designated Computer Assisted Occupational Survey (CAOS) has been in operation since 1972. This system is also built around the Dictionary of Occupational Titles. Its purpose is to identify occupations for exploration.

CAOS uses a battery of aptitude tests measuring General Learning Ability (G), Verbal Ability (V), Numerical Ability (N), Spatial Visualization (S), and Clerical Perception (Q). Scores on the tests are converted into a profile

JC 750 375

which is then related to Aptitude Qualifications Profiles found in the DOT which have been stored in the computer along with other pertinent occupational information. A computer printout provides brief descriptive information about related occupations and gives lead references to the DOT and material on file at the Career Guidance Center.

In addition to the tests the entire program includes several supplementary procedures. The California Occupational Survey (COPS), which also provides a direct lead into the DOT, based on interests, is administered. Before taking the aptitude test battery the student makes a self-estimate of his expected standing on the tests that will be administered. These ratings are used in counseling but are not included in the computer processing.

PURPOSE:

With the two approaches being used the question arises as to which is more effective: self-appraisal or objective measurement? The purpose of this study is to investigate the outcome of each method when both have been applied to the same individual students.

PROCEDURE:

For a group of twenty (20) subject students the self-estimated profiles of aptitudes were processed by the computer in addition to the regular procedure of processing their measured profiles in order to determine comparability of results. If the output obtained from self-appraisal corresponded to that derived from objective test measurement there would obviously be no need for the latter procedure, and a saving in time for both student and testing office would obtain.

FINDINGS:

Results are shown in the accompanying tables. In Table I the number of DOT occupational areas for each subject identified by measurement and by self-estimate is shown in the first two columns. In columns 3 and 4 the number of areas identified exclusively by either method is shown. In column 5 the number of overlapping areas identified by each method is recorded. The total number of specific areas is reported in column 6 and the percentage of mutually identified areas is given in column 7.

With one exception the extent of mutual identification is not great. For Subject S, 9 of 10 areas were the same. For three other subjects the degree of mutuality equalled or exceeded 50% by a narrow margin. Overall the extent to which the same occupational areas were identified by each method averaged 24%.

Table II A reflects the extent to which self-estimated ratings were compatible with measured ratings for each of the specific aptitudes. This is reported as the number and percent of total ratings in which self-estimated and measured ratings were the same; the extent to which self-estimates were higher than measured; and the instances in which subjects underestimated their standings as compared to measured ratings.

Table II B shows the overall extent to which individual self-ratings approximated measured ratings for the five aptitudes.

It will be observed that in no instance was there a high degree of compatibility, although for Number Ability 55% of the subjects estimated a level that matched their measured ratings. In general there appears to be a tendency to underestimate ability levels rather than overestimate them when measured levels are used as a base of reference.

As a second phase of the study the extent to which DOT occupational areas identified by the COPS matched areas identified by aptitude tests and by self-estimate of aptitude levels was examined. The findings are reported in Table III.

The COPS defines 14 occupational interest categories and lists the related DOT occupational areas for each one. For the purposes of this report COPS categories were used for which student responses were at the 75th percentile or higher.

Column 1 shows the number of COP categories for which each subject achieved that level. DOT occupational areas identified through the CAOS test battery are reported in Column 2. The number of DOT areas identified through the COPS which match with those reported in Column 2 is recorded in Column 3 with the percentage degree of mutuality indicated in Column 4.

The same kinds of data based on self-estimate are recorded in columns 5, 6 and 7.

The extent to which there was three-way agreement; interest assessment, test measurement and self-appraisal, is reported in column 8.

It is readily seen that there was almost no consistency of agreement on a three-way basis. The extent to which interest derived areas were the same as those based on aptitude measurement ran from 10% to a high of 73%. For five of the 20 subjects the overlap equalled or exceeded 50%. When interest based occupational groups were compared with those identified through self-estimate, the range of multuality ran from 20% to 73%. Four subjects attained a 50% or better overlap.

SUMMARY AND CONCLUSIONS:

This study was undertaken to determine if occupational areas identified for exploration through aptitude test measurement corresponded to areas identified by self-estimate of aptitudes. Occupational areas indicated by an interest inventory were also examined in relation to the other dimensions.

Relatively little agreement was found for any of the subjects in any of the comparisons examined. The data do not suggest which is the more valid approach, objective measurement or self-appraisal; they only reveal that the two tend not to yield consistent results.

Since the object of either method is to stimulate exploration of occupations and is not intended to be deterministic, each may serve a useful purpose in identifying leads. Instances in which congruence of areas occurs perhaps offer the more significant leads. The revealed tendency of students to underestimate themselves suggests that more positive encouragement may derive from impersonal objective measurement.

Spring, 1975

Table I

MUTUALITY OF OCCUPATIONAL AREAS IDENTIFIED
BY
MEASUREMENT AND BY SELF-ESTIMATE

	Occ. Areas from: (1)	(2)	Unique Areas: (3)	(4)	(5)	(6)	(7)
Subject	Meas	Self-Est	Meas	Self-Est	Mutual Areas	Total Areas	% Mutual
	No.	No.	f	f	f	N	
A	10	21	7	18	3	28	10.71
B	10	10	5	5	5	15	33.33
C	10	10	7	7	3	17	17.65
D	10	5	8	3	2	13	15.38
E	11	10	4	3	7	14	50.00
F	10	10	3	3	7	13	53.85
G	10	10	5	5	5	15	33.33
H	10	10	9	9	1	19	5.26
I	10	11	7	8	3	18	16.67
J	10	10	9	9	1	19	5.26
K	14	15	6	7	8	21	38.10
L	7	12	5	10	2	17	11.76
M	10	13	5	8	5	18	27.78
N	10	3	9	2	1	12	8.33
O	21	12	16	7	5	28	17.86
P	17	14	14	11	3	28	10.71
Q	10	9	3	2	7	12	58.33
R	10	3	8	1	2	11	18.18
S	9	10	0	1	9	10	90.00
T	18	21	10	13	8	31	25.81
	227	219	140	132	87	359	24.23

Table II A

COMPATIBILITY OF SELF-ESTIMATED RATINGS OF SPECIFIC APTITUDES WITH MEASURED RATINGS

Aptitude	Symbol	SE/Meas Equal		Self-Est Higher		Self-Est Lower		Total Ratings
		No.	%TR	No.	%TR	No.	%TR	
General	G	5	25	7	35	8	40	20
Verbal	V	8	40	0	--	12	60	20
Number	N	11	55	2	10	7	35	20
Spatial	S	9	45	5	25	6	30	20
Clerical	Q	9	45	1	5	10	50	20

Table II B

COMPATIBILITY OF SELF-ESTIMATED RATINGS WITH MEASURED RATINGS OF APTITUDES BY SUBJECT

Subject	Self-Est/Meas Equal		Self-Est Higher		Self-Est Lower	
	f	%	f	%	f	%
A	1	20	0	--	4	80
B	1	20	1	20	3	60
C	3	60	0	--	2	40
D	1	20	1	20	3	60
E	2	40	1	20	2	40
F	2	40	0	--	3	60
G	2	40	0	--	3	60
H	2	40	2	40	1	20
I	1	20	1	20	3	60
J	0	--	1	20	4	80
K	3	60	0	--	2	40
L	3	60	0	--	2	40
M	1	20	0	--	4	60
N	2	40	2	40	1	20
O	3	60	2	40	0	--
P	2	40	0	--	3	60
Q	3	60	1	20	1	20
R	3	60	1	20	1	20
S	4	80	0	--	1	20
T	3	60	2	40	0	--

Table III

MUTUALITY OF COPS INTERESTS WITH DOT OCCUPATIONAL AREAS IDENTIFIED BY MEASUREMENT AND BY SELF-ESTIMATE

Subject	(1) COPS Ints In Q 4	(2) Meas DOT	(3) Mutual COPS	(4) % Mutual	(5) Self-Est DOT	(6) Mutual COPS	(7) % Mutual	(8) Mutual 3-Ways
A	11	10	5	50	21	10	48	2
B	--	--	--		--	--	--	--
C	--	--	--		--	--	--	--
D	--	--	--		--	--	--	--
E	4	11	8	73	10	7	70	6
F	9	10	5	50	10	7	70	5
G	5	10	3	30	10	4	40	1
H	4	10	4	40	10	2	20	0
I	14	10	7	70	11	8	73	0
J	6	10	3	30	10	5	50	1
K	4	14	6	43	15	5	33	3
L	3	7	2	29	12	4	33	0
M	4	10	1	10	13	0	--	0
N	5	10	1	10	3	0	--	0
O	1	21	0	--	12	0	--	0
P	3	17	9	53	14	3	21	0
Q	4	10	4	40	9	4	44	2
R	7	10	4	40	3	0	--	0
S	4	9	2	22	10	3	30	2
T	5	18	3	17	21	5	24	1

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JUL 18 1975

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